

## Patent Abstracts of Japan

PUBLICATION NUMBER : 59042460  
PUBLICATION DATE : 09-03-84

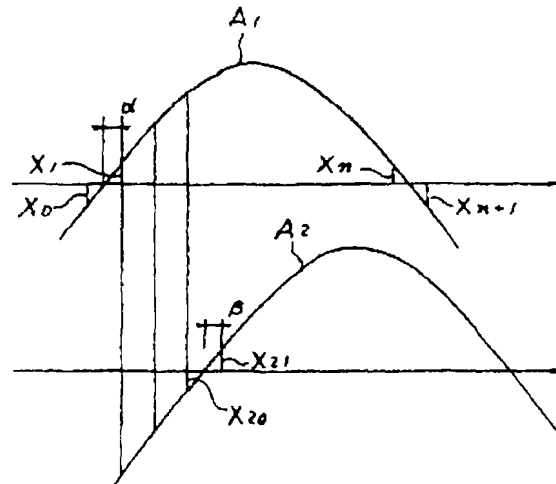
APPLICATION DATE : 01-09-82  
APPLICATION NUMBER : 57150690

APPLICANT : TOSHIBA CORP;

INVENTOR : IGAWA HIROSHI;

INT.CL. : G01R 25/00

TITLE : PHASE DETECTING DEVICE



$$\alpha = \theta \times \frac{|X_1|}{|X_0| + |X_1|} \quad \beta = \theta \times \frac{|X_{21}|}{|X_{20}| + |X_{21}|}$$

**ABSTRACT :** PURPOSE: To detect a phase difference with high accuracy, by sampling two AC inputs from the same electric power source system, and using sampling values before and after zero-crossing of the AC inputs and a phase difference between each sampling.

CONSTITUTION: Two AC inputs inputted from the same electric power source system are sampled by a prescribed sampling frequency, and are converted to digital values. A negative sampling value  $X_0$  and a positive sampling value  $X_1$  in case when the input  $A_1$  is changed to positive from negative for to its polarity are derived, and in the same way, a negative sampling value  $X_{20}$  and a positive sampling value  $X_{21}$  of the input  $A_2$  are derived. Subsequently, a sampling number  $N_0$  extending from the sampling value  $X_1$  of the input  $A_1$  to the negative sampling value  $X_{20}$  of the input  $A_2$  is counted. Subsequently, a phase difference  $\theta$  between each sampling in the actual power supply frequency is derived, phase difference  $\alpha$ ,  $\beta$  are derived by use of the sampling values  $X_0$ ,  $X_1$ ,  $X_{20}$  and  $X_{21}$  and the phase difference  $\theta$ ; the phase difference between two inputs is detected.

COPYRIGHT: (C)1984,JPO&Japio